UNITED STATES PATENT AND TRADEMARK OFFICE

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09/682,343	08/22/2001	Tzu-Chiang Chung	ACMP0018USA	6806

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P O Box 506
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EXAMINER
SOLOMON, GARY L

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> ((b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2.   Claims 1-3 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by the

applicants own admission of the prior art.

For claim 1, the applicant admits in his own admitted prior art: A digital camera

comprising:

an image sensor system (Figure 1, Item 2) for providing n pixels of initial image

information, each pixel having m bits of intensity information for only one color selected from a

group of at least three component colors (Figure 2, RGB) so that the initial image information

comprises n x m bits (Section [0005]);

a first compression system (Figure 1, Item 6) for compressing the n x m bits of the initial

image information into r bits of secondary image information, wherein r is less than n x m

(Section [0007]);

a frame buffer of at least r bits for storing the secondary image information (Figure 1,

Item 10; Section [0007]);

a first decompression system (Figure 1, Item 14) for decompressing the r bits stored in

the frame buffer to provide tertiary image information (Section [0008]; and

an image processing system for accepting the tertiary image information to generate

processed image information comprising a plurality of pixels, each pixel of the processed image

information providing intensity information for each color in the group of at least three

component colors (After the image is stored in the non-volatile memory, it is viewed on the

digital camera as is stated in the applicants own admitted prior art in Section [0002]. This gives

the user of the digital camera the choice of deleting or keeping the picture. The processed image

is viewed in the RGB format as is shown in Figure 2. It is inherent in a digital camera that the

output of the processed image is in an array of pixels.)

For claim 2, the applicant admits all the limitations of claims 1, and also wherein the

image information consists of n x m bits (Section [0006]).

For claim 3, the applicant admits all the limitations of claims 1 and 2, and also wherein

the tertiary image information consists of n x m bits (After the image is decompressed by the

decompression system, it is tertiary image information. It is still in an array form, which is

represented in Figure 2 of n x m bits).

For claim 9, the applicant's own admitted prior art discloses wherein the first image

compression system is a lossless image compression system (Section 007). In a lossless system,

the information is identical to the initial image information when it is decompressed. This is

well known in the art.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
manner in which the invention was made.

4.   Claims 4, 6, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over the

applicant's own admitted prior art in view of Demos (US 5,737,027).

For claim 4, the applicant's own admitted prior art discloses all the previous limitations,

but lacks teaching further comprising a line buffer for storing a plurality of lines of the tertiary

image information and providing a block of serialized tertiary image information to the image

processing system.

However, Demos teaches a pixel interlacing apparatus in which an interlaced video

camera system uses compression and decompression methods (Column 6, Lines 42-48). Demos

further teaches wherein after the decompression of the pixel data in the interlaced system, a multi

line buffer is used to store the lines of the image (Column 6, Lines 49-61). The data from the

lines are then sent to drive the display (Column 6, Lines 58-61).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the

invention to have been motivated to configure a line buffer after the decompression system in the

well known prior art in order to drive any type of video type of video format as is suggested by

Demos in Column 6, Lines 58-62.

For claim 6, the applicant's own admitted prior art discloses a block-based lossy image

compression system (Section [0008]) for compressing a block of processed image information to

provide compressed image information (Figure 1, Item 16) to the permanent storage system

(Figure 1, Item1 8) of the digital camera (Figure 1).

For claim 7, Demos teaches a line buffer that stores the image information after the

decompression (Column 6, Lines 45-55). This information is the tertiary image information. In

order for the image information to be processed by the block based lossy image compression

system, it must fit the pixel dimension requirements of the block based image compression

system. Otherwise, the block-based image compression system would not allow the data in the

system and thus would be unable to process it.

Therefore, it would have been obvious to configure the line buffer in such a manner that

the pixel dimension would be at least as large as the pixel dimension requirements for the block

based lossy image compression system in order for the image to be compressed.

5.   Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over the applicant's

own admitted prior art in view of Demos (US 5,737,027) in further view of Bernstein (US

6,480,231).

For claim 5, the applicant's own admitted prior art and Demos disclose all the previous

limitations, but lack teaching wherein the image sensor system is an interlaced sensor system,

and the line buffer is used to de-interlace the tertiary image information.

The admitted prior art and Demos both disclose interlaced systems and Demos does in

fact using a line buffer to store lines of the decompression output system, which are then sent to

the video output display (Column 6, Lines 40-58).

Bernstein teaches an efficient method of de-interlacing a buffer of image data (Title,

Abstract, Column 1, Lines 1-5). In the Summary Of The Invention (Column 2, Lines 42-64),

Bernstein teaches that for de-interlacing a buffer of image data, scan lines from an image sensor

are transferred to even and odd scan line groups (Column 2, Lines 42-65).

The method and apparatus as disclosed by Bernstein eliminates the need of a duplicate

buffer, which saves memory and decreases memory transfers, thereby increasing overall system

performance.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the

invention to have been motivated to configure the combination of the well known prior art and

Demos with the de-interlacing method of Bernstein in order to eliminate a duplicate and decrease

memory as is suggested by Bernstein in Column 2, Lines 58-64.

6.   Claim 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over the applicant's

own admitted prior art in view of Demos (US 5,737,027) in further view of Miller (US

5,060,286).

For claim 8, the applicant's own admitted prior art and Demos disclose all the previous

limitations, but lack teaching further comprising a raster-based image compression system for

compressing the processed image information to provide compressed image information to a

permanent storage system of the digital camera.

In Miller's Background Teaching (Column 1), he teaches data may be compressed in a

variety of ways. He further teaches a raster row and byte compression method in which software

selectively compresses data on a raster-row by raster- row basis (Column 1, Lines 55-65). The

row-by-row basis compares bytes within adjacent rows and thereby detects repetitions between

the rows. Using Miller's raster method results in a superior performance compared to other

compression methods because graphics images are often in a vertical or horizontal direction

(Column 5, Lines 17-22).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the

invention to have been motivated to configure the applicant's own admitted prior lossy

compression system with a raster based compression system in order selectively compress data

when graphics images are arranged in a vertical or horizontal directions suggested by Miller in

Column 5, Lines 17-22.

Conclusion

7.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Gary L Solomon whose telephone number is (703)-305-4370.

The examiner can normally be reached on Monday - Friday 8:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Ngoc-Yen Vu can be reached on (703)-305-4946. The fax phone number for the

organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GLS

NGOC-YEN VU
PRIMARY EXAMINER